Parks Canada Parcs Canada

Canada

"Using Earth Observation Technology to Monitor and Assess Ecosystem Integrity and Climate Change in Canada's National Park"

Earth Sciences Sector
Secteur des sciences de la Terre
Canada Centre for Remote Sensing
Centre canadien de télédétection
Natural Resources Canada
Ressources naturelles Canada

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St.Petersburg, FL – March 1-3, 2005

CSA ASC

uOttawa
L'Université canadienne
Canada's university

Parks Canada Highlights (…2)

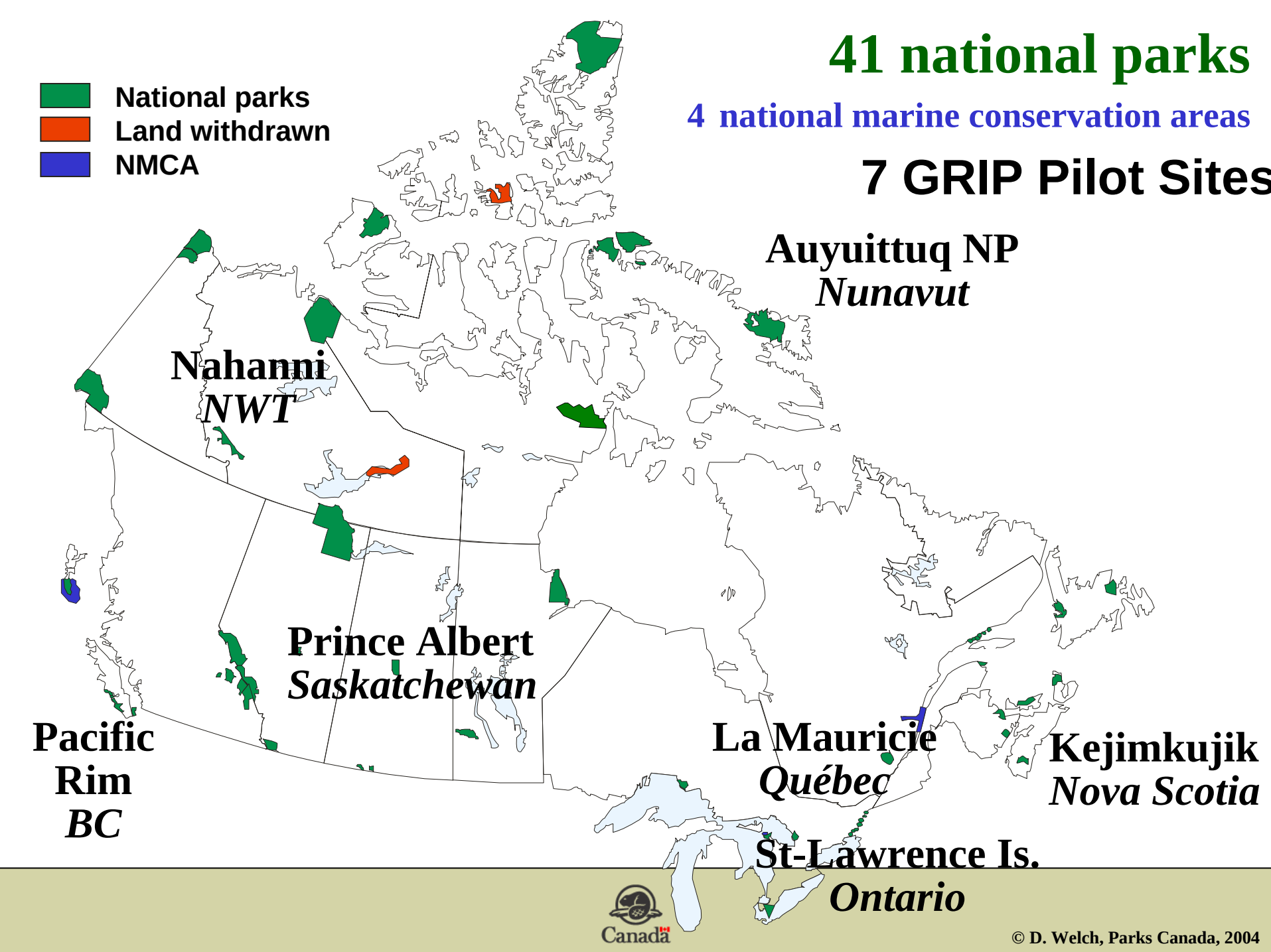
- 41 national parks/national park reserves (264 810 km^2)
- Largest is Wood Buffalo, 44 802 km^2
  Smallest is St-Lawrence Islands, 8 km^2
- Range in person-visits per year from Auyuittuq, 300 to Banff, 5 million
- 3 national marine conservation areas
- 145 (out of 849) national historic sites including 7 canals

Canada

Parks Canada Highlights (2 of 2)

- 89% of all federal lands within Canada
  (2.98% of Canada's total land area)
- More than double the size of PEI, Nova Scotia and New Brunswick combined or state of Flor & Louisiana combined)
- Parks Canada continues to acquire lands for new and ongoing PCA programs.
  (I.e Torngat Mtns – Nahanni NP.)

Canada

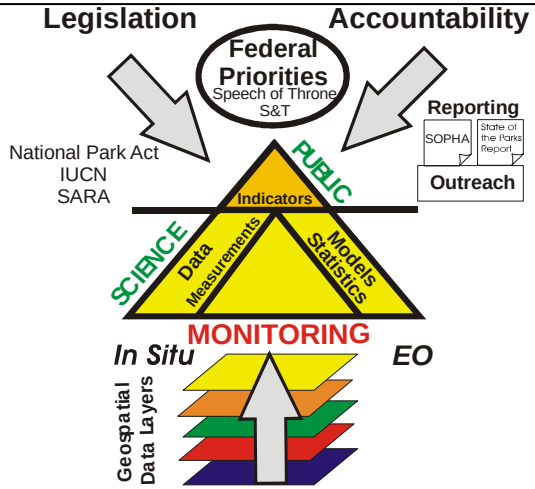


Project Title: Using Satellite Remote Sensing Technology to Monitor and Assess Ecosystem Integrity and Climate Change in Canada's National Parks (Year 1) **Status:** Ongoing

Lead Depart.: Parks Canada Agency, National Parks Directorate, Ecological Integrity Branch

Keywords: Protected areas, monitoring, ecological land classification, indicators, land cover – land use, climate change, national parks

Concept



Objectives

To develop indicators for monitoring and assessing Ecosystem Integrity and Climate Change in Canada's National Parks.

Description and Technical Approach

The project will focus on all bioregions across the country for 6-10 National Parks that have well-established monitoring plans and good linkages with the park reporting and management cycle. These parks have been chosen to represent a wide range of regional-scale ecosystems across the Parks Canada system. The new products and information developed by this project will form a major component of future State of the Park Reports and State of Protected Heritage Areas Reports. In addition, the EO derived information will be use internally by PCA for the on-going national monitoring program (at national, regional and local levels), and communications with stakeholders associated with conservation issues.

Results To Date / Expected Impacts

- Development of operational methodologies for using EO-RS to generate monitoring measures of Ecological Integrity and Climate Change impacts in and around Canada's national parks, as defined by the Parks Canada's Ecological Integrity Monitoring Framework.
- Fostering a lasting partnership among PCA, CCRS, and University of Ottawa to enable successful implementation of the methodology and ready adoption to changing availability of EO-RS data sources.
- Development of a successful outreach program to communicate project results.
- Better information about changes in the ecological health and Climate Change in Canada's National Parks.
- Greater awareness of the value of Canada's National Parks by Canadians.

Partners:

- Parks Canada
- NRCan (Earth Science Sector, CCRS)
- University of Ottawa (Biology and Geography Departments)

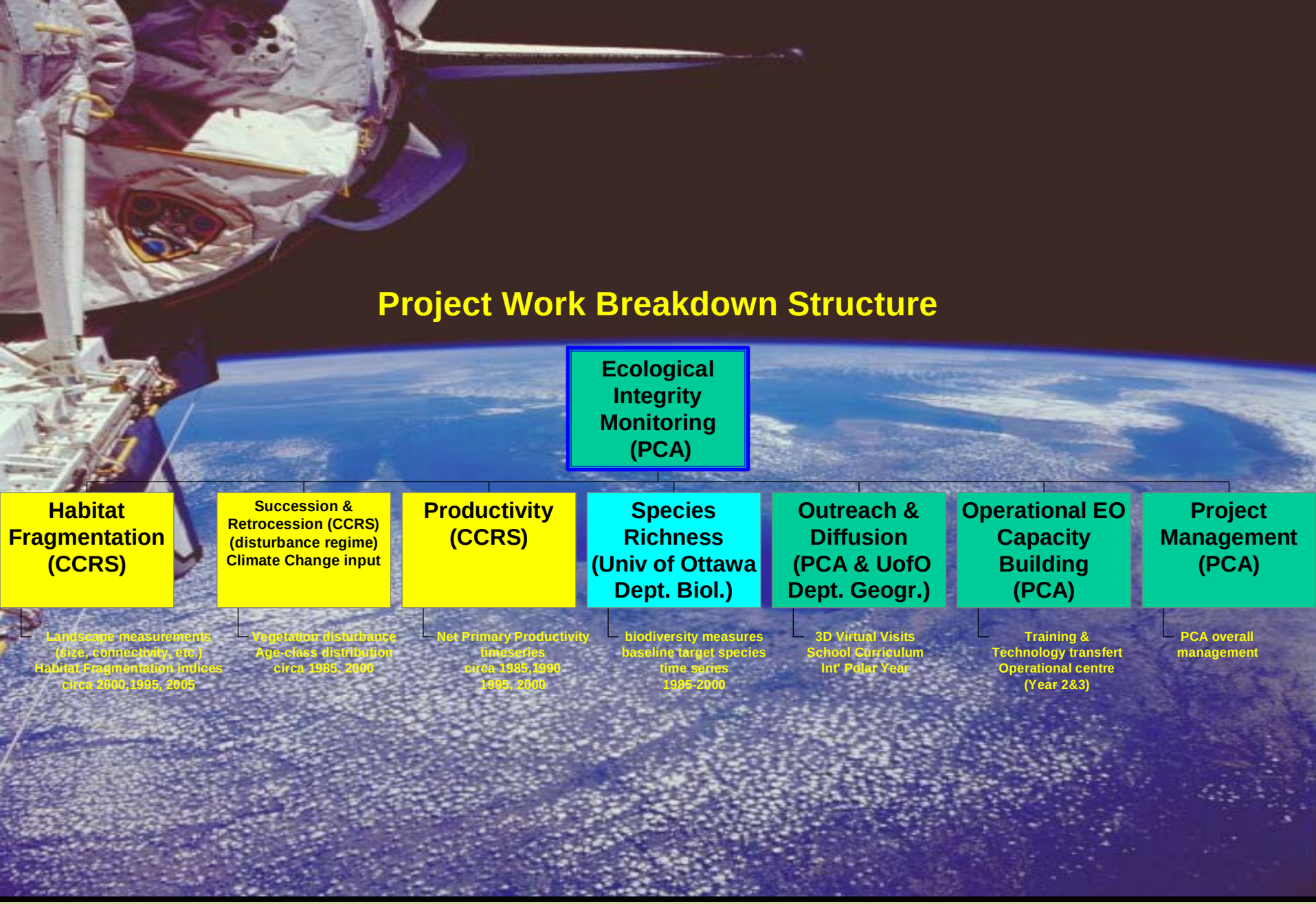
Schedule:

Start: FY 2004/05 **Funding: $ 250K/year** **CSA**
End: FY 2006/07 **$ 250K/year** **Partners**
$ 1.5 M **Total**

Outputs:

- Habitat fragmentation indices derived from land cover maps generated from medium resolution satellite data; derived time series (1985-2000) of fragmentation indices.
- Related indices of park ecosystem function that track the extent of major vegetation disturbances and age-class.
- Net primary productivity (NPP) measures and compilation of selected national parks; validation of an ecosystem productivity model.
- A 2000 baseline of target species' modeled distributions for selected national parks; operational method for producing five-year updates of predicted species distributions and biodiversity measures for selected parks.
- Showcase the richness of Canada's heritage via national parks; build EO-based 3D Fly-through of National Parks; develop material for outreach National Educational Program.

Project Work Breakdown Structure



Canada

Progress on Yr 1 GRIP Deliverables

Parks	Compiled Landsat Data (Sources)	Atm. Correction to surface reflectance	Collect existing LC products	Mosaic imagery w/ Theel-Sen	Baseline (2000) LC/FGDC Legend	Baseline (2000) Fragment-ation	Baseline (2000) LAI	Baseline Prod. Climate Data	Ancillary Data collection Metadata	3D – flythrough/ Outreach
Auyuittuq	4 scenes CTI	DDV (all)						Yes	Yes	Yes
Kejimkujik	2 scenes RSI	DDV (all)						Yes	Yes	
La Mauricie	2 scenes RSI	DDV (all)	E.C.	In progress				Yes	Yes	In development
Nahanni	6 scenes CTI	DDV (2 scenes)	PCA+ EOSD	yes	Yes			Yes		
Pacific Rim	2 scenes RSI	DDV (all)	EOSD	yes	Yes (in house)		Yes	Yes	Yes	
Prince Albert	1 scene X 4CTI	DDV (all)	EOSD+ CCRS	N/A	Yes	Yes (sample metrics)		Yes		
St-Lawrence Islands	1 scene CTI	DDV (all)		N/A	Yes (in house)	Yes (sample metrics)		Yes	Yes	Yes

DDV:Dark dense vegetation method
CTI: Center of topographic Information
EOSD: Earth Obs.Sustainable Dev.(CFS)
RSI: RadarSat International